Abstract Submitted
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Particle-Induced Gamma-ray Emission Spectroscopy Over a Broad Range of Elements[1] HANNAH OLDS, SUNY Oneonta, JOHN WILKINSON, MEGHANNE TIGHE, WALTER MCLALLEN, PATRICK MCGUIRE, University of Notre Dame — Ion beam analysis is a common application of nuclear physics that allows elemental and isotopic information about materials to be determined from accelerated light ion beams One of the best know ion beam analysis techniques is Particle-Induced Gamma-ray Emission (PIGE) spectroscopy, which can be used *ex vacuo* to identify the elements of interest in almost any solid target. The energies of the gamma-rays emitted by excited nuclei will be unique to each element and depend on its nuclear structure. For the most sensitivity, the accelerated ions should exceed the Coulomb barrier of the target, but many isotopes are known to be accessible to PIGE even below the Coulomb barrier. To explore the sensitivity of PIGE across the periodic table, PIGE measurements were made on elements with Z = 5, 9, 11-15, 17, 19-35, 37, 42, 44-48, 53, 56, 60, 62, 73, and 74 using 3.4 MeV protons. These measurements will be compared with literature values and be used as a basis for comparison with higher-energy proton beams available at the University of Notre Dame's St. Andre accelerator when it comes online this Fall. The beam normalization technique of using atmospheric argon and its 1459 keV gamma-ray to better estimate the integrated beam on target will also be discussed.

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